

WHAT IS CLAIMED IS:

1. A sterile sheath for an injection syringe comprising:
  - a sealable casing made of plastic, the casing including
  - an output connection piece, wherein the output connection piece includes a valve whose direction of flow is exclusively from an injection syringe to the exterior, wherein an interior of the sterile sheath is configured to receive the injection syringe, and wherein the output connection piece is configured to be connected to the syringe.
2. The sterile sheath of claim 1, wherein an outer region of the output connection piece is configured to receive a medical device, and wherein the medical device is one of a needle, an adapter, a multiport valve, and an infusion bottle.
3. The sterile sheath of claim 1, wherein the sealable casing is at least partially transparent.
4. The sterile sheath of claim 1, wherein the valve is one of a non-return valve and a duckbill valve.
5. The sterile sheath of claim 1, wherein the output connection piece includes at least one radial discharge aperture sealable by means of an elastic ring element.
6. The sterile sheath of claim 5, wherein the elastic ring element is a tubular ring element, which encloses a portion of the output connection piece.
7. The sterile sheath of claim 1, wherein the output connection piece includes a cone-shaped recess configured to receive a syringe cone of the injection syringe.

8. The sterile sheath of claim 1, wherein the output connection piece includes a hollow body configured to receive a cylindrical section of the injection syringe.
9. The sterile sheath of claim 8, wherein the hollow body has a cylindrical shape.
10. The sterile sheath of claim 1, wherein the output connection piece includes, on an end opposite from the valve, an annular plate.
11. The sterile sheath of claim 10, wherein the annular plate has an oval aperture.
12. The sterile sheath of claim 1, wherein the output connection piece is formed of a rigid plastic by injection molding.
13. The sterile sheath of claim 1, the sealable casing further comprising a pressure pocket configured to connect to the output connection piece.
14. The sterile sheath of claim 13, wherein the pressure pocket is formed of plastic by injection molding.
15. The sterile sheath of claim 13, wherein the pressure pocket is formed by a dipping method.
16. The sterile sheath of claim 13, wherein the pressure pocket is formed by means of extrusion-blow molding.
17. The sterile sheath of claim 13, wherein the pressure pocket includes a shoulder piece configured to connect to the output connection piece, and further includes a film-like plastic hood.

18. The sterile sheath of claim 17, wherein the shoulder piece includes a snap-in lug configured to engage a snap-in lug on an annular plate of the output connection piece.

19. The sterile sheath of claim 13, further comprising a sealing element to seal between the output connection piece and the pressure pocket.

20. The sterile sheath of claim 2, wherein the output connection piece includes a section configured as a cone to receive a cone-shaped recess of the medical device.

21. The sterile sheath of claim 2, wherein the output connection piece and the medical device are connected by means of a swivel closure.

22. The sterile sheath of claim 21, wherein the swivel closure is one of a luer-lock closure and a screw thread.

23. The sterile sheath of claim 1, the sealable casing further including a pressure pocket configured to connect to the output connection piece, wherein the output connection piece further includes at least one radial discharge aperture sealable by means of an elastic ring element; a cone-shaped recess configured to receive a syringe cone of the injection syringe; and an annular plate, on an end of the output connection piece opposite the valve, configured to connect to the pressure pocket.

24. A method of keeping an injection syringe aseptic, comprising:

drawing fluid into an injection syringe;

placing the injection syringe within an interior of a sterile sheath, wherein the sterile sheath comprises:

a sealable casing made of plastic, the casing including

an output connection piece wherein the output connection piece includes a valve whose direction of flow is exclusively from the injection syringe to the exterior, wherein an interior of the sterile sheath is configured to receive the injection syringe, and wherein the output connection piece is configured to be connected to the syringe;

connecting one end of the syringe to the output connection piece;  
connecting the pressure pocket to the output connection piece; and  
connecting a medical device to the outer region of the output connection piece.

25. The method of claim 24, further including operating the syringe enclosed in the sterile sheath to administer the fluid to a patient.

26. The method of claim 25, further including maintaining the syringe within the sterile sheath so long as fluid, intended to be used in subsequent administrations, remains in the syringe.

27. The method of claim 26, further including changing the medical device connected to the output connection piece prior to a subsequent administration.

28. The method of claim 27, wherein changing the medical device includes exchanging disposable needles.

29. The method of claim 24, wherein connecting the medical device includes connecting one of a needle, an adapter, a multiport valve, and an infusion bottle to the output connection piece.

30. The method of claim 24, wherein drawing fluid into the syringe includes drawing a medication into the syringe.
31. A sterile sheath for an injection syringe, comprising :
- a pressure pocket having a shoulder portion and a hood portion;
  - an output connection piece having first and second ends and including a hollow body, a one way valve disposed on one of said ends, and a plate portion on the other of said ends, wherein said plate portion is configured to connect to said shoulder portion to create a sealed casing, and wherein said hollow body is configured to receive an injection syringe therein.
32. The sterile sheath of claim 31, wherein the end of the output connection piece with the valve is configured to be connected to a medical device.
33. The sterile sheath of claim 32, wherein the medical device is one of a needle, an adapter, a multiport valve, and an infusion bottle.
34. The sterile sheath of claim 31, wherein at least a portion of at least one of said pressure pocket and said output connection piece is transparent.
35. The sterile sheath of claim 31, wherein the valve is one of a non-return valve and a duckbill valve.